IV. MONITORING AND EVALUATION

CHAPTER IV

MONITORING AND EVALUATION

The purpose of monitoring and evaluation of the Forest Plan is to provide information on achievement of goals, attainment of objectives, implementation of proposed practices, and adherance to management requirements.

Monitoring will determine if:

- The Forest is achieving the goals and objectives of the Plan.
- Practices are being applied as proposed.
- Forest Direction and Management Area Direction are being applied as proposed.
- Expected costs of implementing the Plan are accurate.
- The application of proposed practices, Forest Direction, and Management Area Direction is responding to the planning problem statements.
- The effects of implementing the Plan are occurring as predicted.
- Third-party activities on National Forest System lands are consistent with the Plan.
- Management practices on adjacent or intermingled non-National Forest System lands are affecting achievement of Forest Plan goals and objectives.
- Implementation of the Forest Plan is keeping other agencies from reaching their stated objectives.

Table IV-1 lists monitoring requirements. These requirements focus on monitoring achievement of the goals and objectives listed and discussed in Chapter III (36 CFR 219.11(d) and 219.12(k)). Standards governing how monitoring requirements are implemented are contained in documents incorporated by reference, in the Forest Service Manual, and in Forest Service Handbooks. Such monitoring will be done on a sample basis (36 CFR 219.12(k)). To this end, an annual monitoring program will be prepared as part of the Forest's annual work program. This program will include the details displaying amount and location of monitoring to be accomplished. This will be based on the approved work program and funds available for monitoring. Specific locations, sampling intensity, manpower requirements, and costs will be identified in the annual monitoring program.

Monitoring will be done using standard review procedures prescribed in section 1410 of the Forest Service Manual. The General Management Reviews and the Functional Assistance Trips prescribed in FSM 1410 will be used to ascertain if management direction contained in Chapter III is appropriately implemented. As part of the annual Forest Plan Evaluation Report, each member of the Interdisciplinary Team will prepare a report identifying existing or potential

problems in the application of the Plan on the ground. Significant problems identified in this process may be the basis for initiation of a Management Review.

Evaluation of the results of the monitoring program will be documented in the annual Forest Plan Evaluation Report. The significance of the results of the monitoring program will be analyzed and evaluated by the Forest Interdisciplinary Team. Recommendations based on the evaluation will be made to the Forest Supervisor. A file of the Forest Supervisor's decisions resulting from monitoring and evaluation will be maintained for future use in amending or revising the Forest Plan.

The Forest Plan will also be monitored through the use of a set of implementation maps. Implementation maps for the Forest Plan indicate the vicinity of proposed and probable management practices. The maps show ten years of projects. Each year (in coordination with the development of the Forest Plan Evaluation Report) one year of projects will be added to the map. Completed projects will be deleted from the maps and recorded in the historical file of the Forest resource data base. In this way, the implementation map and schedule can be updated and revised according to the annual budget and changes in national and regional priorities. The implementation maps will be available for review at each Ranger District office and at the Forest Supervisor's office.

As implementation occurs, deviations in such things as budgets and resource data will be noted. If such deviations do not effect the intent of management or the long-term mix of goods and services provided, they will be noted and documented as amendments to the Forest Plan. This documentation will be brief and copies will be sent to all on the Forest Plan mailing list. In this way, individuals, organizations, and other agencies will be notified of such changes in the Plan.

As part of the annual evaluation report made by the interdisciplinary team, deviations in data, budget, ability to implement practices, costs of practices, and effects of management will be noted. Based on a review of these deviations, a determination of their significance will be made. If they do not effect intent of management or long-term mix of goods and services, they will be handled as described above. If they do affect management intent or long-term mix of goods and services, the public will be notified that a problem exists and public input will be requested to help define the context and nature of the problem. Alternative solutions will then be formulated, analyzed, and displayed in appropriate environmental documents, either an Environmental Assessment (EA) or an Environmental Impact Statement (EIS). Summarizations of such amendments will be mailed to all on the mailing list. In the case of an EIS, public comment will be requested before a final decision is made.

If, prior to the required revision of the Forest Plan, there are significant changes in such things as issues and concerns, demands, markets for goods and services, or budgets, then a revision of all or part of the Plan will be undertaken. Examples of items which could trigger such a revision would be recovery of the grizzly bear or discovery of a major pool of oil and gas. Revisions will follow the same procedure as the original development of the Plan; that is, the public will be notified that a revision is indicated and will be asked to provide input to help define the parameters of the problem.

Based on the broad range of issues and concerns, new alternatives for a significant portion of the Forest, if not the entire Forest, will be formulated. These alternatives will then be analyzed and the results shared with the public through a new draft EIS and proposed Plan. These will be similar to the draft EIS and proposed Plan developed in this round of Forest planning. After the review and comment period, reanalysis will be done and an EIS and Plan will be prepared and mailed to all on the mailing list.

These three mechanisms for keeping the Plan relevent to the Forest and its management situation are required by regulation (36 CFR 219). Also required is a complete review and revision of the Plan every ten to fifteen years. Through this combination of activities, the Plan will be responsive to changes in public demands and perceptions, to changes in scientific information, to changes in basic inventory data, and to changes in budget. Further, this will be done in a way that keeps the public notified of the progress on implementation, reasons for changing direction, and the Forest Service preferred alternative for such change. This will make the Plan a dynamic guide to management with the capability to respond to changing needs of the American Public, while at the same time keeping the public informed of such changes.

A number of comments on the Proposed Plan raised concerns regarding the adequacy of monitoring displayed in this Chapter (see Chapter VI of the EIS). Commenters were concerned that this level of monitoring was not adaquate for meeting the mission of Forest management. That is not the intent of this Chapter. Monitoring requirements in this Chapter are limited to monitoring implementation of practices as proposed in the Plan and the costs and effects of those practices. This includes monitoring achievement of the goals and objectives, and the use of standards and guidelines, as listed in Chapter III. The monitoring discussed in this Chapter is above and beyond the normal data collection and monitoring of forest conditions that is done on the Forest. Forest Service policy requires a periodic review and upgrading of all resource data. Included in this periodic review are estimations of actual recreation use, air and water quality, ecological conditions, range conditions, timber inventories, roads and trails, facilities, and habitat for fish and wildlife. The costs of these required inventories and monitoring are part of program management factored into the total fixed cost of managing the Forest. Costs reported for monitoring in Appendix J of the Plan are costs above and beyond these. Such costs are for monitoring implementation of specific projects rather than for a normal resource program.

TABLE IV-1

Monitoring Requirements

Item Monitored	Data Source Techniques Used	Measurement Frequency	Allowable Variability from Plan Objectives
Plan			
Significant changes in land productivity and any problems, needed changes or lack of performance in the application of all prescriptions	- Letters - Program Review - Public Input - Environmental Assessments - Staff Activities - Activity Reviews	At least once every five years	When there are strong indications of change in land productivity.
Actual costs of applying Managment Direction from Forest Plan	Program Accounting and Management Attainment Reporting System (PAMARS).	Annually using a three-year average for both costs and information	Whenever costs increase at least twice as fast as the rate of inflation for two consecutive years.
Recreation			
Off-road vehicle use of designated travelways	Observation and non-statistical	Variable	When use conflicts with management goals for the managment area or unacceptable resource damage (soil, water and visual) occurs, travel management wil be reevaluated.)
Trail condition	Inspection	Variable	When condition departs from Regional Acceptable Work Standards, managment will be reevaluated.
Dispersed recreation use and experience	Recreation Information Management (RIM) use	Variable	When use exceeds ROS capacity guidelines for management area prescriptions for three years, management will be reevaluated.
Dispersed campsite condition	Frissell site insepection	Variable	When conditon exceeds standards and guidelines for the management area prescription. Sites will be closed or rehabilited.
Developed site use	RIM use and double sampling	Variable	When use is less than 10% or more than 40% of theoretical capacity for three years, site management will be reevaluated.
Developed site condition	Inspection, RIM facility condition report	Variable	When RIM facility condition class is below two, corrective action will be initiated.

TABLE IV-1 (Continued)

Monitoring Requirements

Item Monitored	Data Source Techniques Used	Measurement Frequency	Allowable Variability from Plan Objectives
Downhill skiing use	Lift ticket sales (Permittee)	Annual	When use exceeds managed capacity for three years, ski area development schedule will be reevaluated.
Wilderness			
Wilderness use	RIM	Variable	When bio-physical and social setting conditons exceed Standards and Guidelines for wilderness management area prescription for three years, corrective action will be initiated.
Campsite condition	Frissell inspection	Variable	When conditions exceed Standards and Guidelines for wilderness management area prescription, sites will be closed or rehabilitated.
Grazing use	See Range		
Forage utilization	See Range		
Range condition and trend	See Range		
Visuals			
Adopted Visual Quality Objective (VQO)	Management reviews	Variable	When adopted, VQO is not met by projects, corrective action will be initiated.
Cultural			
Compliance with cultural resource regulations (36 CFR 800)	Management reviews	Variable	Per regulations
Protection of properties eligible or potentially eligible for the National Register	Observation and inspection	Variable	Change from previously reported condition will cause reevaluation of protection measures.
Threatened and Endangered Species			
Preventable grizzly mortalities	Agency reports	Annually	Not more than six per year for the entire Yellowstone Ecosystem

TABLE IV-1 (Continued)

Monitoring Requirements

Item Monitored	Data Source Techniques Used	Measurement Frequency	Allowable Variability from Plan Objectives
Compliance with grizzly guidelines	Guidelines for Management involving Grizzly Bears in the Greater Yellowstone Ecosystem	Annually/continuously	Deficiencies in compliance will be corrected prior to second decade
Grizzly habitat effectiveness	Cumulative effects model	Annually	Meet thresholds in all Bear Units by end of first decade
Black footed ferret surveys	BFAT techniques	Annually in response to specific proposals	None
Wintering bald eagle surveys	NWF Survey instructors	Annually	None
Wolf population status	Sighting reports	Annually	None
<u>Wildlife and Fish</u>			
Cavity dependent species habitat	Vegetation Data Base	Annual	± 10% from projected outputs
Winter range carrying capacity	Browse transects. Pellet counts, winter range surveys, range anlaysis, *Population estimates by state wildlife agency	Annual	± 10% from planned capacity
Wildlife and fish habitat improvement (includes structural and nonstructural)	MAR Annual Wildlife Report	Annual	± 15% in targeted outputs
Wildlife habitat diversity	Vegetation Data Base	Annual or as new projects are completed	20% noncompliance with diversity standards in applicable Forest Direction or management area prescriptons.
Riparian condition rating	Riparian Ecosystem Scorecard	5% sample annually	25% of sampled areas not meeting Forest Direction - an upper mid seral successional stage.
Population and habitat trends of management indicator species	RIS or equivalent, vegetation data base. Program reviews, activity reviews, program reviews, and professional judgement of Forest Service biologist. *Population and harvest figures from the State wildlife agency.	Annual	- 20% change in species habitat distribution or long term population declines.

TABLE IV-1 (Continued)

Monitoring Requirements

Item Monitored	Data Source Techniques Used	Measurement Frequency	Allowable Variability from Plan Objectives
Range			
Grazing use	Annual grazing statistical reports. Grazing permits, actual grazing record	Annual	± 10% of planned amount
Forage utilization	Field exam to determine production/utilization	Annual on 20% of allotment	Utilization will not exceed acceptable standards by more than 10%. Standards are defined in Range Management, Forest Direction (Ch. III of Plan).
Range condition and trend	Field examinations, range reanalysis	Every 10 years	A downward trend in range conditions is not allowed. Range is managed to achieve or maintain satisfactory or better ecological condition. The time alloted to arrive at satisfactory conditon is variable; generally, the rate allowed for a change of one condition class to the next higher is 15 years, plus or minus 5 years.
Allotment management and permittee plans	Annual Report and allotment folders	Reviewed Annually	-10% of management Plans
Timber			
Allowable sale quantity	Periodic Timber sale Accomplishment Report	Annual	± 5% of planned allowable sale quantity
Restocking of clearcuts	Regeneration Surveys	1st, 3rd, 5th years	Limits set by Forest Direction
Timber stand improvements	Silvicultural Accomplishment Report	Annual	± 25% of planned TSI

TABLE IV-1 (Continued)

Monitoring Requirements

Item Monitored	Data Source Techniques Used	Measurement Frequency	Allowable Variability from Plan Objectives
Growth response	Stage II stand examination	Once following treatment and every 10 years thereafter	Variance in actual growth and assumptions made in growth simulations.
Size of clearcuts	Review silvicultural prescriptions, sale maps and sales program	Semiannually all sales	Clearcuts exceed specified maximum size with Regional Forester's approval.
Opening created by management activities	Review silvicultural prescriptions, sale maps and long range sales program	Annually, on all sales	In continuously forested stands, created openings involve more area than adjacent forested area. Created opening exceed size of contiguous natural opening 20 acres or more in size.
Lands not suited for timber production	Review of management activities	Annually on land classified no suitable for timber production	No prohibitied activities may be conducted or scheduled on land classified as not suitable for timber production.
<u>Water Resources</u>			
Water quality trend; effects of specific resource management practices on water yield/ quality; varification of models/coefficients used to predict effects in the Plan and to set threshold levels	Defined in Shoshone National Forest Water Resource Monitoring Plan. Frequency dependent upon monitoring objective and statistical reliability required. Sampling and site selection to facilitate extrapolation of data based on watershed and channel characteristics. Annual monitoring reports will be prepared and the Water Resource Inventory updated. These are the sources used for Plan monitoring.		Subject to sampling error, which is dependent upon monitoring objective. Where the objective is to determine/ demonstrate compliance, variability is defined by state and federal water quality standards. Noncompliance will result in corrective action and intensified monitoring.
Water uses	Water Resource Inventory Water Uses Inventory Big Horn Adjudication	Annually	Protect Forest water uses and rights including instream flow needs at levels quantified by the Adjudication. Maintain correct use iventory for 100 percent of the uses.
<u>Minerals</u>			
Compliance with terms of operating plans and consistency with Plan	Inspections	Variable	Noncompliance will result in corrective action. Action plan will be prepared to correct any inconsistency.

TABLE IV-1 (Continued)

Monitoring Requirements

Item Monitored	Data Source Techniques Used	Measurement Frequency	Allowable Variability from Plan Objectives
Lands			
Land exchange offers	Annual Accomplishment Reports	Annual	± 50% of planning period target
ROW acquisition	Annual Accomplishment Reports	Annual	± 50% of planning target
Occupancy trespass	Annual Accomplishment Reports	Annual	± 50% of planning period target
Land-line location	Annual Accomplishment Reports	Annual	± 25% of Planning target
Compliance with terms of land use authorizations (special uses) and consistency with Plan	Inspections	Variable	Noncompliance will result in corrective action. Action plan will be prepared to correct any inconsistency.
Soils			
Soil erosion	MSLE (Modified soil loss equation)	Annual	Erosion will be within tolerance levels as determined by SRI interpretations.
Soil and water resource improvment (improved watershed conditions)	Dependent upon project: MSLE, transects, photos chemical and physical analysis of soil and water.	Annual	± 20% of annual target
Soil survey	Acre targets developed by the Forest Service and accepted by the Regional office - recorded on maps.	Annual	± 25% of annual target
Facilities			
Road construction/ reconstruction (arterial and collector)	Annual Report of FR&T Accomplishment	Annual	± 25% of planned accomplishment
Trail construction/ reconstruction	Annual Report of FR&T Accomplishment	Annual	± 25% of planned accomplishement

TABLE IV-1 (Continued)

Monitoring Requirements

Item Monitored	Data Source Techniques Used	Measurement Frequency	Allowable Variability from Plan Objectives
Protection			
Fuel treatment target	Annual Fuel Treatment Accomplishment Report	Annual	± 25 % of planned amount
Fire management effectiveness index	Annual Forest Budget	Annual	± 25% of planned amount
Forest insects and diseases	Survey	Annual	Determination that outbreak is likely to exceed endemic stage
Air Resource			
Effects of other resource management on air quality and air quality related values	Air Monitoring Action plans will prescribe techniques and frequency of sampling. Annual reports will be prepared.		Subject to sampling error. Variability is dependent upon acceptable error in relation to compliance with state and federal air quality standards. Noncompliance will result in corrective actions.

*To the extent available, annual big game herd unit reports and fish habitat and population data harvest statistics, prepared by the Wyoming Game and Fish Department, will be used in addition to Forest Service records to help verify accuracy and consistency. This information will be incorporated into monitoring as it is obtained in cooperation with the Wyoming Game and Fish Department.